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ACCESSION NR: AT4036049 ENCLOSURE: 02

Legend to Enclosure 01:

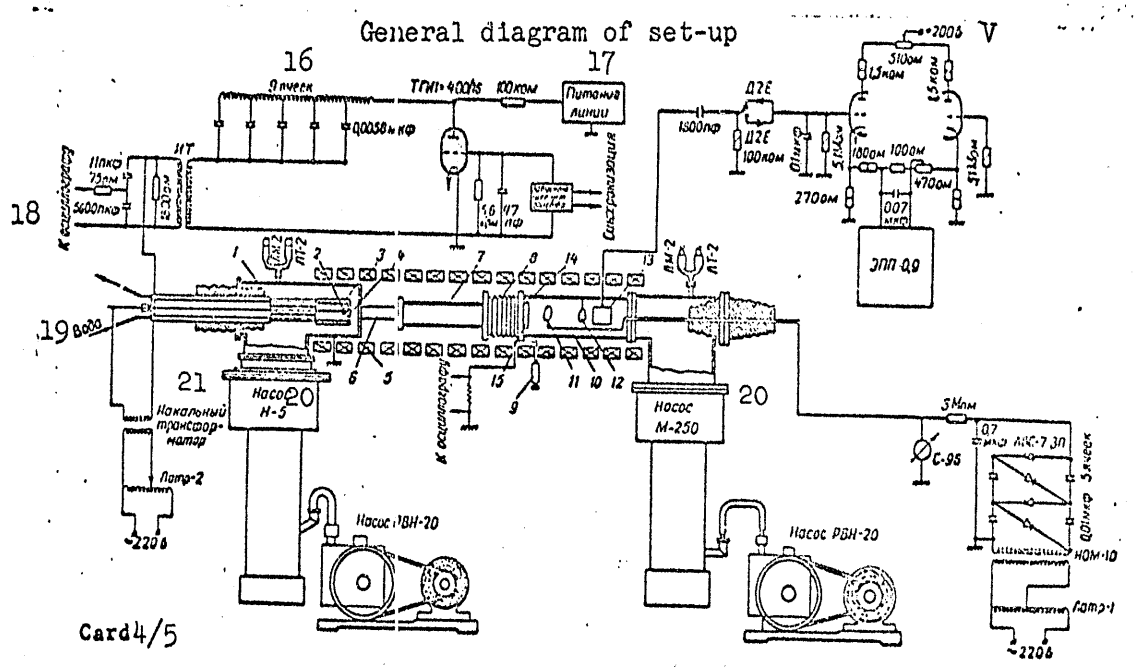
1 - electron gun chamber, 2 - cathode heating, 3 -cathode post, 4 - cathode, 5 - solenoid for focusing longitudinal magnetic field, 6 - tube for producing pressure drop, 7 - plasma chamber, 8 - bellows,9 - mechanical leak valve, 10 - 'retarding field' analyzer, 11 - second analyzer grid, 12 - third analyzer grid, 13 - Faraday cup, 14 - entrance flange for measurement of the beam current, 15 - vacuum window for pumping out the plasma chamber, 16 - nine cells, 17 - line supply, 18 - to oscilloscope, 19 - water, 20 - pump, 21 - filament transformer, MKΦ - microfarad, KOM - kilohm, OM - ohm,

Card 5/5

ACCESSION NR: AT4036049

ENCLOSURE: 01

General diagram of set-up



Card 4/5

ACCESSION NR: AT4036049

phase velocities which are smaller than the velocity of light in vacuum, and have intensities which reach 50--60 kV/m at the end of the interaction region. A small group of the electrons (1--4% of the total current) experiences an increase in energy up to 50%. If the electron beam is initially modulated, its frequency experiences a Doppler shift at the end of the interaction. Orig. art. has: 7 figures and 5 formulas.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 21May64 ENCL: 02

SUB CODE: ME NR REF SOV: 016 OTHER: 005

Card 3/5

ACCESSION NR: AT4036049

under which oscillations are excited, the frequency spectrum, the amplification coefficients, the character of instability, and comparison of the experimental data with the theory. The electron beam had an approximate energy 15 keV and a current 5--8.5 A. It was injected in a quartz and glass plasma chamber, ionizing the air in it, producing a plasma, and interacting with the latter. After passing through the plasma the beam was electrostatically analyzed. The procedures used to measure the various parameters are described. The experiments have shown that the beam loses an appreciable part of its initial energy (~18%). This energy is consumed in excitation of oscillations and heating the plasma. Some 50--60% of the energy loss goes to excitation of longitudinal space-charge density waves and transverse electromagnetic oscillations; this agrees qualitatively with the theory. It follows from the measurements that the amplification coefficients and the maximum resonant frequency are also in satisfactory agreement with the calculated data. The longitudinal space charge density waves excited in the plasma and in the beam have

ACCESSION NR: AT4036049 S/2781/63/000/003/0125/0138

AUTHORS: Berezin, A. K.; Berezina, G. P.; Bolotin, L. I.; Lyapkalo, Yu. M.; Faynberg, Ya. B.

TITLE: Interaction of pulsed high-current electron beams with a plasma in a magnetic field

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 125-138

TOPIC TAGS: plasma research, plasma magnetic field interaction, plasma wave absorption, plasma wave reflection, electron beam, microwave plasma, plasma electromagnetic property

ABSTRACT: The investigation reported was aimed at determining the energy losses of a beam passing through a plasma, the conditions

Card 1/5

BEREZIN, A.K.; BEREZINA, G.P.; BOLOTIN, L.I.; FAYNBERG, Ya.B.

Interaction between pulsed heavy-current beams and a plasma in a magnetic field. Atom.energ. 14 no.3:249-256 Mr '63.
(MIRA 16:2)

(Electron beams) (Plasma (Ionized gases))
(Magnetic fields)

S/057/62/032/005/014/022
B104/B102

longitudinal "sagging" of the potential occurs. At the same time the secondary electrons return to the axis of the tube. On account of the "sagging" of the potential these electrons are accelerated in the direction of the analyzer and also in the direction of the anode. The energy of the slow electrons is determined by the amount of longitudinal sagging. The energy is proportional to the current strength and the velocity of the electron beam. The longitudinal sagging is perhaps largest at the instant when the current density attains its maximum value, and probably at this same instant the accelerated electrons have their maximum energy. With increasing contraction of secondary electrons at the axis there occurs a new density distribution. The beam of the secondary electrons begins to broaden, and the sagging decreases. The density and the sagging change more rapidly with increasing pressure. K. D. Sinel'nikov and Ya. B. Faynberg are thanked for discussions and advice. There are 9 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov (Physico-technical Institute AS UkrSSR, Khar'kov)

SUBMITTED: June 17, 1961

BEREZINA, G. P.

2

9.3130
24.6716
24.7120

S/057/62/032/005/014/022
B104/B102

AUTHORS: Berezin, A. K., Stupak, V. G., Bolotin, L. I., and Berezina, G. P.

TITLE: The passage of intense pulsed electron beams through dielectric tubes. II

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 5, 1962, 600-605

TEXT: The energy spectrum of 35 kev electrons in quartz and glass tubes of diameter 9 mm and length 60 mm was oscillographed with the help of an electrostatic analyzer (angle of aperture 2^{0}). A group of slow and another of fast electrons (35 kev) were observed. A study was made of the behavior of these groups in their dependence on the beam energy, the current strength, the pressure of the residual gas, and other factors. The following conclusion is drawn from these observations: When the pressure in the tube is above a critical pressure, ions and slow secondary electrons are generated by the electron beam in the tube. The ions are trapped near the axis and the electrons travel to the wall. At a certain instant reneutralization starts. The electron beam contracts and a radial and

Card 1/2

The passage of intense pulsed... S/057/62/032/005/013/022
B104/B102

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov
(Physicotechnical Institute AS UkrSSR, Khar'kov)

SUBMITTED: June 17, 1961

Card 3/3

electrons travel towards the wall and the ions collect about the axis of the tube. With progressive formation of ions the electron beam is focused and after time $t \sim \tau$ the current attains a maximum value at the exit of the tube. As the electron beam contracts towards the axis of the tube so does the region of ion formation. When the intensity of the beam becomes sufficiently large, the number of electrons produced exceeds that lost by diffusion towards the wall, recombination, etc. Then reneutralization starts, and the radial electric field changes signs. The electrons travel towards the axis of the tube and the space charge inside it becomes differently distributed. An excess of negative space charge is formed at the center and the current through the tube begins to decrease. At a pressure of $3.6 \cdot 10^{-4}$ mm Hg the current strength of a pulse decreases by about 20 % during the duration of the pulse; at a pressure of $8 \cdot 10^{-4}$ mm Hg the decrease is 80 %. The current pulse passing through a dielectric tube is 4-5 times larger than that through a copper one. With the help of the focusing properties of a dielectric tube described here electron beams may be "canalized" over large distances. There are 7 figures.

24.2120
7 3130

S/057/62/032/005/013/022
B104/B102

AUTHORS: Berezin, A. K., Stupak, V. G., Bolotin, L. I., and Berezina, G.P.

TITLE: The passage of intense pulsed electron beams through dielectric pipes. I

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 5, 1962, 593-599

TEXT: The cathode of the electron gun was a tungsten spiral 16 mm in diameter. The pressure in the vacuum chamber was $3 \cdot 10^{-6}$ mm Hg. It was possible to produce 50 kev electron pulses with a current density of up to 1 a/cm^2, duration of the pulses reaching 4.6 μsec. The dielectric tube (quartz, glass) had an inner diameter of 8-10 mm and the pressure inside it could be varied between $2 \cdot 10^{-4}$ and $5 \cdot 10^{-2}$ mm Hg. The electron density of a pulse was measured by an shf method while the size and the shape of the electron pulses were oscillographed. An intense electron pulse broadens on account of the space charge. At the same time the electron pulse ionizes the residual gas creating positive ions and secondary electrons. The

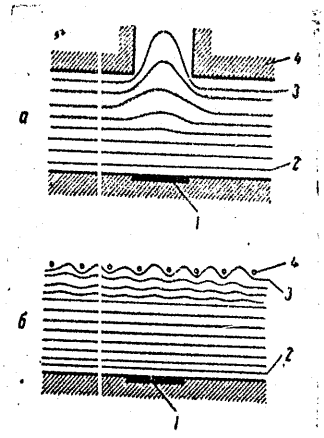
Card 1/3

High power electron gun for ... S/120/62/000/002/031/047
E140/E163

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR
(Physicotechnical Institute, AS Ukr.SSR)

SUBMITTED: July 26, 1961

Fig.1



Card 2/2

S/120/62/000/002/031/047
E140/E163

AUTHORS: Berezin, A.K., Stupak, V.G., ~~Berezina, G.P.,~~ Bolotin, L.I., Lyapkalo, Yu.M., Solopikhin, D.P., and Bondarenko, V.P.

TITLE: High power electron gun for operation under difficult vacuum conditions

PERIODICAL: Pribory i tekhnika eksperimenta, no.2, 1962, 136-138.

TEXT: An electron gun is described giving 20 A at 25 kV in a vacuum of 5×10^{-5} mm Hg. The cathode is a cylindrical tablet of lanthanum hexaboride, vacuum-sintered, and located in the homogeneous region of the focussing magnetic field. A grid-form anode is used, resulting in a smaller defocusing field than the more usual pierced disc (Fig.1). The transparency of such an anode is also satisfactory. The anode mesh is of tungsten wire 60 μ diameter with a pitch of 1.5 mm. In plasma interaction experiments the gun was used for several months under continuous evacuation without replacement of any of its parts. There are 4 figures.

Card 1/2

23733

Passage of intense pulsed....

S/057/61/031/006/017/019
B116/B201

spectrum until the radial field has changed its sign, i.e., not until the electrons start moving from the tube wall toward the beam axis. The results presented in Figs. 1a, 1b, 1c have been obtained under the following conditions: voltage of the beam, 35 kv; beam current, 0.4 a; pressure in the chamber, $3.6 \cdot 10^{-4}$ mm Hg. It is finally pointed out that in the course of experiments described here also the energy spectrum of slow electrons as a function of pressure, intensity, and velocity of the primary electron beam has been has been determined experimentally (no details, however, are given). [Abstracter's note: Essentially complete translation.] There are 2 figures and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov (Institute of Physics and Technology, AS UkrSSR, Khar'kov)

SUBMITTED: December 30, 1960

Card 4/4

Passage of intense pulsed...

current I_p was mounted on the quartz tube. The signal reaching the ring was differentiated by an RC circuit and fed to the oscilloscope. One of the oscillograms is shown in Fig. 1b. The negative half-wave on the oscillogram corresponds to the motion of secondary ions toward the wall and to the capture of ions near the electron-beam axis. If "overneutralization" takes place in the beam, the electric field will change its sign, and the ions, due to diffusion and other factors, will start moving toward the wall, while the secondary electrons migrate to the beam axis. The positive half-wave on the oscillogram corresponds to this condition. The energy spectrum of electrons passing through the quartz tube, measured with the electrostatic analyzer, permits distinguishing two separate electron groups, i.e., a group of fast electrons and a group of slow electrons. If, under the same conditions, the electron beam is allowed to pass through a metal tube, the spectrum will, as usual, consist of fast electrons only. Experiments have been conducted to determine the moment at which slow electrons of a given energy appear in the beam. The time was calculated from the beginning of the voltage pulse at the electron gun onward. The moment at which slow electrons appear at the analyzer output as a function of their energy is presented in Fig. 1c. As may be seen from Figs. 1b and 1c, slow electrons do not appear in the energy

Passage of intense pulsed...

tude of the time required for complete neutralization of the beam), they will return to the electron-beam axis. Both the radial and the longitudinal component of the electric field are modified by this process. This, however, has an effect upon conditions on the passage of the beam through the tube, particularly upon the energy of secondary electrons. An experimental study has now been made of the passage of a pulsed electron beam through a dielectric tube. The experiment has been conducted in the following manner: A square voltage pulse having an amplitude up to 50 kv, a duration of 4.4μsec (Fig. 1a), and a frequency of 50 pulses/second was applied to the electron gun placed in a vacuum chamber at a pressure of $2 \cdot 10^{-6}$ mm Hg. The gun permitted obtaining an electron beam with an amperage of up to 1 a in the pulse. The electron beam was injected into a quartz tube with an internal diameter of 9 mm and a length of 120 mm. On the other side of the tube, the vacuum chamber was connected with a device, by which the pressure in the chamber was varied from $2 \cdot 10^{-4}$ to 10^{-2} mm Hg. Part of the beam reached the electrostatic analyzer, by which the energy spectrum of the electrons in the beam was determined. A 30-mm wide metal ring, used for measuring the radial

23733
S/057/61/031/006/017/019
B116/B201

9,3130

AUTHORS: Berezin, A. K., Stupak, V. G., Bolotin, L. I., Berezina, G.P., Lyapkalo, Yu. M., Sevryukov, Yu. N.

TITLE: Passage of intense pulsed electron beams through dielectric tubes

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 6, 1961, 751 - 753

TEXT: The passage of an electron beam through metal tubes had been studied in theoretical and experimental papers by E. G. Linder and K. J. Herngvist (Ref. 1: Journ. of Appl. Phys., 21, 1088, 1950), by H. F. Ivey (Ref. 2: Advances in Electronics and Electron Physics, 6, 137, 1954), and by M. D. Gabovich (Ref. 3: UFN, 56, 215, 1955). On the passage of a beam through a tube, the residual gas is ionized, and positive ions as well as slow (secondary) electrons appear in the tube. In the case of a metal tube, these secondary electrons reach the wall, and do not participate in the further processes related to the passage of the electron beam through the tube. If the dielectric tube is "overneutralized", the secondary electrons will first reach the wall, and, after a certain time (of the order of magni-

Card 1/3+

Interaction of strong...

40%. This is in good agreement with experiments. There are 6 figures and 13 references: 10 Soviet and 3 non-Soviet. The four references to English-language publications read as follows: D. Bohm, E. Gross, Phys. Rev., 75, 1851, 1864 (1949); D. Bohm, E. Gross, Phys. Rev., 79, 992 (1950); V. I. Veksler, Proc. Symp. CERN, 1, 80 (1956); M. Biondi, S. Brown, Phys. Rev., 75, 1700 (1949).

SUBMITTED: June 17, 1961

Card 3/3

Interaction of strong...

interaction. The plasma density was measured by a cylindrical cavity excited with a TM_{030} wave from a klystron. The upper limit of measurement was $4 \cdot 10^{10} cm^{-3}$. Its value during the passage of current was determined from the plasma decay law: $n = n_0 \exp(-t/\tau)$, where τ is the mean time for plasma decay and n_0 the density at t=0. The straight line n(t) was drawn from three measurements and extrapolated toward t=0. Maximum electron density was $7 \cdot 10^{10} cm^{-3}$, while the value $9 \cdot 10^{10} cm^{-3}$ resulted from shf-interferometric measurements. The electron energy spectrum was recorded by means of a beam catcher connected to an oscillograph. These spectra were investigated at the input and output of the plasma tube, and for pressures of $4 \cdot 10^{-3}$ and $3 \cdot 10^{-4}$ mm Hg, for which losses reached 11% and 1% of the initial energy, respectively. Conclusions: Energy losses increase with plasma density and with current, and are proportional to the electron mean free path in the plasma. Calculation of losses due to elastic collisions between electrons and gas molecules yields $\simeq 0.04$ ev, and $\simeq 3$ ev for those due to inelastic collisions. Coherent interaction, however, causes losses of 3.2 kev if self-modulation of the beam is assumed to reach

Card 2/3

21404
S/089/61/011/006/001/014
B102/B138

24.6716

AUTHORS: Berezin, A. K., Faynberg, Ya. B., Berezina, G. P., Bolotin, L. I., Stupak, V. G.

TITLE: Interaction of strong electron beams with plasma

PERIODICAL: Atomnaya energiya, v. 11, no. 6, 1961, 493 - 497

TEXT: The energy losses of a nonmodulated electron beam passing through an air plasma were determined. Beam voltage was 26 kev, amperage 8 a, electron density $(7-9)\cdot10^{10}$cm^{-3}, and pressure in the discharge tube $3\cdot10^{-4}$-$4\cdot10^{-3}$ mm Hg. The quartz plasma tube, 64 cm in length, was arranged so that the greater part of the plasma was outside the focusing magnetic field (2000 oe). The electron gun, a LaB_6 disk 10 mm in diameter, was perpendicular to the magnetic field and was with voltage pulses of up to 30 kev, a width of 3.5 μsec, and repetition frequency of 50 cycles. This gun was able to produce current pulses of 9 a at the plasma chamber input, where the focusing field was 1200 oe. In the field-free region amperage decreased with increasing flight path down to 2 - 3 a due to Coulomb

Card 1/3

MIKHAYLOV, V.V.; NAZARKIN, A.T. [deceased]; RASKIN, Ya.L.; SVERDLIN, M.S.; YEFREMOVA, V.K.; Prinimala uchastiye: BEREZINA, G.P.

Granulated organic pigments for the paint industry. Lakokras. mat.i ikh prim. no.3:32-35 '62. (MIRA 15:7)
(Pigments)

SHAMIS, D.L.; BEREZINA, G.O.; SAUBENOVA, M.G.

Conditions for the formation of organic acids by pentose utilizing bacteria cultured on the prehydrolysate of reed. Trudy Inst. mikrobiol. i virus. AM Kazakh. SSR 7:44-47 '63. (MIRA 16:12)

BEREZINA, G.O.

Production of organic acids from the prehydrolysate of reed. Trudy Inst. mikrobiol. i virus. AN Kazakh. SSR 5:77-80 '61. (MIRA 15:4)

(Reed (Botany)) (Acids, Organic)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800010-6

BEREZINA, G.O.

Production of lactic acid from reed washings. Trudy Inst. mikrobiol. i virus. AN Kazakh. SSR 4:99-102 '61. (MIRA 14:4)
(LACTIC ACID)

L 08262-67

ACC NR: AT6036487

In programmed medical investigations involving the use of computers, it is possible to have direct information inputs from man to machine and also to use memory for temporary information storage. Output from the on-board computer can be sent directly to the telemetric channel, or to memory storage units, or to the doctor. Programmed medical investigations with the use of an on-board computer can turn out three types of output: in the form of values for individual signs (up to 200 digits for a single investigation), in the form of processed results for each of the program periods (up to 20 digits for a single investigation), and in coded form indicating the general condition of the subject, any deviations present, and the measures necessary to correct them (4 to 5 digits).

It has been found that in the course of a programmed investigation it is possible to obtain a large number of different signs and, based on these signs, to formulate diagnostic criteria which will permit a clear differentiation between normal and pathological conditions. Investigation of the diagnostic effectiveness of various programs under clinical conditions has found methodological justification and is useful not only for space but also for earthside medicine. It should be assumed that the method of programmed investigation with automatic processing of information by means of an on-board computer will solve the problems of medical investigation and diagnosis under conditions of prolonged spaceflights.

[W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 4/4

and arteriosclerosis.

During analysis of the data obtained from each of the subjects, about 150 different signs were determined. Each of the signs was then processed statistically for each of the groups and classified on the basis of degree of reliability of differences. Signs which were close to one another in the two groups were rejected as diagnostically ineffective. Sufficiently distinct signs achieved the significance of diagnostic criteria.

During the rest period, signs which could be used as criteria were very few. Most of them were indicators of pulmonary ventilation. During the breath--holding test, differences showed up in a number of signs. The most important of these was the nature of changes in the RR intervals of electrocardiograms. During work of the dynamograph substantial differences in many signs appeared between the two groups. During the second rest period, more clearly expressed differences were observed than during the first rest period.

It is assumed that in the future it will be possible to select groups of signs which will make it possible to assure differential diagnosis of many states and even deviations in the functioning of individual systems of the organism.

L 08262-67

ACC NR: AT6036487

laboratory and clinical conditions. The use of a digital computer makes it possible to speed up the diagnostic process, to increase its accuracy, and to make it possible to transmit to ground stations a large volume of medical data along telemetric channels of limited capacity.

The experimental checking of one of the variants of the research program on healthy and sick subjects is described in this paper. It was felt that if the program turns out to be effective during investigation of sick persons, then it should prove effective in revealing sudden or gradual deviations in healthy persons, such as cosmonauts during spaceflights. The program was calculated for utilization of a three-channel amplification system and four research methods. The program involved the use of four periods. During the first period EKG, SKG, and pulmonary ventilation were registered for 1.5 min. During the second period, the results of a breath--holding test (inhaled, 20 sec and exhaled, 20 sec), were registered. During the third period, work performed on the wrist dynamograph was measured for a period of 1 min at a rate of one contraction per second. In this case, EKG, pulmonary ventilation, and pulmonary myogram were registered. The fourth period was devoted to rest (recovery), comparable to the first period. This method was tested on 35 healthy subjects and 35 subjects suffering from infarcts of the myocardium, hypertonic disease,

Card 2/4

L 08262-67 EWT(1) SCTB DD/GD

ACC NR: AT6036487 SOURCE CODE: UR/0000/66/000/000/0049/0051

AUTHOR: Bayevskiy, R. M.; Berezina, G. A.; Bukharin, Yu. V.; Chernyayeva, S. A.

35
B+1

ORG: none

TITLE: The choice of diagnostic criteria in constructing algorithms for on-board computers [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 49-51

TOPIC TAGS: space medicine, biotelemetry, biocybernetics, diagnostic medicine, spacecraft computer

ABSTRACT: In order to assure diagnostic medical monitoring under conditions of prolonged spaceflight, a method of programmed investigation based on the use of removable sensors and electrodes was proposed. The method envisaged the use of a small number (4 to 6) of amplification channels, while the number of parameters measured could be as high as 20 to 30. The research is conducted in accordance with a strict time schedule and the use of strictly programmed functional loads. However, in order to conduct effective programmed research under spaceflight conditions, it is first necessary to develop and check research programs under

Card 1/4

BEREZINA, G.A.; LYUBIMOVA, Ye.D.

Bibliography of the literature on psychology published in 1963. Vop. psikhol. no.5:153-186 S-O '64 (MIRA 18:1)

BEREZINA, G.A.; LYUBIMOVA, Ye.D.

Index of literature on psychology published in 1961. Vop. psikhol. 8 no.5:124-162 S-O '62. (MIRA 16:5)
(Bibliography--Psychology)

BEREZINA, G.A.

ARIYEVICH, A.M., professor; STEPANISHCHEVA, Z.G., kandidat biologicheskikh nauk; BEREZINA, G.A.; KRASNOPOL'SKAYA, V.I.

Mycotic infections caused by antibiotics. Sov.med.19 no.7:38-43 Jl '55. (MLRA 8:10)

1. Iz mikologicheskogo otdela (zav.-prof. A.M. Ariyevich) Tsentral'nogo kozhno-venerologicheskogo instituta (dir.-kand. med. nauk N.M. Turanov) Ministerstva zdravookhraneniya SSSR, iz Kuntsevskoy gorodskoy bol'nitsy (glavnyy vrach V.A. Stasiyuk) iz Moskovskoy oblastnoy psikhonevrologicheskoy bol'nitsy No.1 (glavnyy wrach G.M. Khanlaryan)

(FUNGUS DISEASES, etiol. and pathogen.
antibiotics)
(ANTIBIOTICS, inj. eff.
fungus dis.)

DUDAVSKIY, V., inzh. [translator]; BLAGOVA, Z., inzh. [translator]; BEREZINA, G. [translator]; DZHIBLADZE, V. [translator]; CHERNENKO, B.G., kand.tekhn.nauk, red. [deceased]; DREMAYLO, P.G., otv.red.; TSUKERMAN, S.Ya., red.izd-va; GALANOVA, V.V., tekhn.red.

[Use of hydrocyclones in coal preparation; collection of translated articles] Primenenie gidrotsiklonov pri obogashchenii uglia; sbornik perevodov statei. Pod red. B.G.Chernenko. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1960. 160 p. (MIRA 13:10)

1. Gosudarstvennyy proyektno-konstruktorskiy i nauchno-issledovatel'skiy institut po obogashcheniyu i briketirovaniyu ugley.
(Coal preparation) (Separators (Machines))

SOV/112-57-9-18236

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 9, p 8 (USSR)

AUTHOR: Nikolayev, M., Glybovskiy, A., Berezina, G.

TITLE: Electric Circuit With Inertial Nonlinear Elements
(Elektricheskaya tsep' s inertsionnymi nelineynymi elementami)

PERIODICAL: Sb. rabot stud. nauch. o-va Penzensk. industr. in-ta, 1956, Nr 3, pp 18-24

ABSTRACT: Bibliographic entry.

Card 1/1

ILYALETDINOV, A.N.; MANILOV, Sh.; BEREZINA, F.S.

Mobilization of the P_2O_5 of phosphate meal during the decomposition of rice straw. Izv. AN Kazakh. SSR. Ser. biol. nauk 3 no.1:52-57 Ja-F '65. (MIRA 18:5)

BEREZINA, E. G.

"Isomerization of Unsaturated hydrocarbons over metallic oxides. XII. Preparation of methyl pentadienes by dehydration of dimethyl allyl carbinol over chromium oxide-on-alumina." by R. Ya. Levina, A. A. Faimil'berg, V. M. Tatevskii, and E. G. Berezina. (p.233)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Volume 21, No. 2

79-28-5-32/69

Synthesis of Some Bifunctional Compounds With Sulfide Sulfur in the Molecule

chlorobutane and 200 gr dinitrile of adipinic acid at 113-140°C (mixing for 10-12 hours). Di-(4-nitriletetramethylene)-sulfide was synthetized from a mixture of 30 gr sodiumsulfide (9 times H_2O), 45 gr ε-chlorovaleronitrile, 100 gr diethyleneglycol and 10 mg water at 120°C (mixing for 6 hours). Di-(4-carboxy-tetramethylene)-sulfide of a mixture of 24,5 gr di-(4-nitrile-tetramethylene)-sulfide and 100 mg of concentrated hydrochloric acid (heating at 100°C for 4 hours). Di-(5-aminopentamethylene)-sulfid was obtained from 20 gr di-(4-nitriletetramethylene)-sulfide, dissolved in 200 ml of waterless ethylalcohol and bit-by-bit, added 40 gr of metallic sodium (during boiling). There are 2 references, none of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass (Scientific Research Institute for Plastics)

SUBMITTED: April 15, 1957

Card 2/2

AUTHORS: Lutkova, V. I., Berezina, B. B. 79-28-5-32/69

TITLE: Synthesis of Some Bifunctional Compounds With Sulfide Sulfur in the Molecule (Sintez nekotorykh bifunktsional'nykh soyedineniy s sul'fidnoy seroy v molekule)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1265 - 1266 (USSR)

ABSTRACT: Dinitriles, diamines and dicarboxylic acids with sulfide sulfur in the molecule can be of interest as intermediate products in the synthesis of polyamides, polyurethanes and polyesters. It is known that the synthesis of some compounds of this group can be realized through the δ-chlorovaleronitril (Reference 1). Data on this synthesis are insufficient; there are no descriptions of the syntheses and properties of the obtained products and the syntheses are described only schematically. The present investigation was carried out in order to elaborate the methods for the syntheses of δ-chlorovaleronitrile, di-(5-nitrile-tetramethylene)-, di-(4-carboxytetramethylene)- and di-(5-aminopentamethylene)-sulfide. δ-chlorovaleronitrile was produced from a mixture of 65 gr KCN, 254 gr 1,4-di-

Card 1/2

Feb 51

BEREZINA, B. B.

USSR/Chemistry - Acetylene Hydrocarbons

"Synthesis of Hydrocarbons. XV. Shythesis of All- kynes-3 (γ-Acetylene Hydrocarbons) P. Ya. Levina, Ye. A. Viktorova, B. B. Berezina, Lab Org Chem Imeni Acad N. D. Zelinskiy, Moscow State U

"Zhur Obshch Khim" Vol XXI, No 2, pp 240-242

Developed method for synthesis of alkynes-3 ab alkylation of 1-sodiumlkynes-1 with diethylsulfate. Synthesized were hexyne-3, heptyne-3, octyne-3, monyne-3, with respective yields of 50, 26, 41, and 31% of theoretical.

176T12

BEREZINA, A.I.

EXCERPTA MEDICA Sec.6 Vol.10/12 Internal Medicine D'56

7185. BEREZINA A.I. *Treatment of influenza patients with desiccated anti-influenza serum of Smorodintzeff SOVETSK. MED. 1956, 1 (67-68) Tables 2 (Russian text)

During the winter epidemic of influenza in 1953/54 116 patients were treated with desiccated Smorodintzeff anti-influenza serum by instillation of 1 g. daily to each nostril. Other patients were treated with sulphonamides and antipyretics. One gram of the serum contains 1.0 mg. of the specific A and B components, 10,000 U. penicillin, sulphathiazole up to 1 g. The group of patients treated with the serum showed a shorter duration of fever and only 2 cases of pneumonia (2.6%) as compared with the control group in which 8 pneumonias, 1 otitis and 2 cases of sinusitis (11%) were recorded as complications of influenza.

Anigstein - Galveston, Tex. (XX, 6)

Berezina, A.G.

3678. INVESTIGATION OF CHEMICAL PROPERTIES OF COKING COALS FROM THE IRKUTSK BASIN. Lapina, V.A. and Berezina, A.G. (Izv. Fiz.-Khim. nauch.-issled. Inst. Irkutsk. Univ. (Bull. Phys.-Chem. sci. res. Inst. Irkutsk Univ.), 1953, vol. 3 (1/2), 63-71; abstr. in Ref. Zh. Khim. (Ref. J. Chem., Moscow), 1955, (20), 47442). Five coals from different deposits in the Irkutsk basin were examined. They were similar in composition of organic matter (77-78% carbon, 4.5-5.5% hydrogen and 41-47% volatiles), but different in coking properties. The coals were subjected to proximate analysis, determination of composition of organic matter and cokeability, extraction of bitumens and humic acids, and determination of wettability with ethyl alcohol. The residues after the extraction of bitumens and humic acids were also subjected to analysis, determination of composition of organic matter and cokeability. The cokeability was greater for the high sulphur (5-7%) coals. This is attributed to the structure of these coals being complicated by the presence of sulphur atoms.

CH

1

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800010-6

BEREZIN, Z. A.

MOROZOV, V.F., master; BEREZIN, Z.A., tekhnik; KOVALEV, K.V., inzhener.

Regulator of condensate level for turbine condensers. Energetik 5 no.5:16 My '57. (MLRA 10:6)

(Feed-water regulation)

BEREZIN, Yu.V.

Some characteristics of measurements of the effective number of electron collisions in the ionosphere using Appleton's method. Geomag. i aer. 4 no.5:957-962 S-O '64. (MIRA 17:11)

1. Moskovskiy gosudarstvennyy universitet, fizicheskiy fakul'tet.

ILLEGIBLE

ILLEGIBLE

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ACCESSION NR: AP4043251

tion can be considered normal. The distribution law for slow fluctuations of amplitude and R_{app} agrees satisfactorily with the theoretical law (even if no allowance is made for possible absorption fluctuations). This makes it possible to assert that the influence of large ionospheric inhomogeneities on the amplitude of a reflected wave is manifested in their focusing effect. In addition, large inhomogeneities also cause appreciable fluctuations of radio wave absorption in the ionosphere. When measuring radio wave absorption the influence of large inhomogeneities hinders or completely prevents reliable interpretation of the measurements. This influence is attenuated considerably when the results of absorption measurements are averaged over a period of about 90 minutes. A method is presented for a still better attenuation of the influence of large inhomogeneities; this method is also useful in determining the instrument constants of ionospheric stations. Orig. art. has: 6 formulas and 5 figures.

ASSOCIATION: Fizicheskiy fakul'tet, Moskovskiy gosudarstvenny*y universitet (Physics Department, Moscow State University)

SUBMITTED: 15Nov63 ENCL: 00

SUB CODE: AA NO REF SOV: 007 OTHER: 002

Card 2/2

ACCESSION NR: AP4043251 S/0203/64/004/004/0681/0687

AUTHOR: Berezin, Yu. V.

TITLE: Some results of an experimental investigation of radio wave absorption in the ionosphere

SOURCE: Geomagnetizm i aeronomiya, v. 4, no. 4, 1964, 681-687

TOPIC TAGS: ionosphere, radio wave, radio wave absorption, ionospheric inhomogeneity, ionospheric station, focusing law

ABSTRACT: When there are large inhomogeneities in the ionosphere, the amplitude and therefore the apparent coefficient of radio wave reflection R_{app} should be subject to the focusing law. It has also been concluded that these values should conform to a definite distribution law. The author carried out experimental investigations to check this assumption using apparatus which has been described elsewhere (Yu. V. Berezin, Geomagn. i aeronomiya, 1961, 1, No. 4, 606). The various factors responsible for the discrepancy between the experimental and theoretical laws of distribution of R_{app} are discussed. It was concluded that large ionospheric inhomogeneities are responsible for slow fluctuations of the amplitude and phase path of a reflected signal. The distribution law for the rate of change of phase path is $f_0'(t)$, and as a result the functions $f_0''(t)$ in the first approxima-

Card 1/2

ACCESSION NR: AP4013138

technique must be used, the limits of the equations representing the focusing lev-
els. By this approximation of geometrical optics, the amplitude of reflective waves and the apparent reflection coefficient are determined. Distribution laws are derived from these--for amplitude and apparent reflection coefficient. An approximation law is also obtained for distribution of the reflection coefficient with proper consideration of variations in absorption. In the simplest form the amplitude, reflection coefficient, and distribution are related by the formula $\overline{\log A_1} \approx \log A_0 + \overline{\log R} = \log 2$. Orig. art. has: 3 figures and 15 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet Fizicheskiy fakul'tet (Moscow State University Physics Department)

SUBMITTED: 05May63 DATE ACQ: 02Mar64 ENCL: 00

SUB CODE: AA NO REF SOV: 008 OTHER: 001

Card 2/2

ACCESSION NR: AP4013138 S/0203/64/004/001/0054/0060

AUTHOR: Berezin, Yu. V.

TITLE: The distribution law of apparent reflection coefficient of radio waves from the ionosphere

SOURCE: Geomagnetizm i aeronomiya, v. 4, no. 1, 1964, 54-60

TOPIC TAGS: apparent reflection coefficient, radio wave, ionosphere, reflected wave

ABSTRACT: In considering the effect of large inhomogeneities in the ionosphere on a reflected wave the author has assumed that on reflection from the ionosphere the amplitude diminishes by a factor R (the reflection coefficient) and the phase of the wave changes according to a law represented by f (a second-derivative function). He uses equations for amplitude from a previous work by V. D. Gusev and Yu. V. Berezin (Vestn. MGU, Fizika, 1961, No. 5, 39), from which it follows that when the phase function is equivalent to zero the amplitude at any distance from the ionosphere is determined by the value of R and by the amplitude of the wave before its reflection from the ionosphere. When the function is not zero, however, the knowledge of the two values is insufficient for unique determination, and a focusing

Card 1/2

Radio-wave absorption measurements ...

$\sigma^2_{f''_0} = \sigma^2_{f'_0} \left| \varrho''_{f'_0}(0) \right|$, $\left| \varrho''_{f'_0}(0) \right| \sim 1/\Delta^2$, $\tau_{00} \leqslant \tau_0 \leqslant \Delta$ - horizontal dimension of large inhomogeneities, τ_0 - radius of correlation of the process $f'_0(t)$, τ_{00} - radius of correlation of the process $f''_0(t)$, $\varrho_{f'_0}$ - correlation factor, $\sigma^2_{f''_0}$ - dispersion, $\Omega = 2\pi/T_0$, $T_0 = 24$ hr. For practical application of the results obtained it is necessary to collect experimental data on various ionosphere layers during various seasons and hours. The observation time T has to be taken as short as possible. To measure the reflection factor for the reflection from the F_2 layer, T must be of the order of about 1 hr. Continuous information on the regular change of the reflection factors can be achieved by sliding averaging. (Ref. 9: V. S. Pugachev. Teoriya sluchaynykh funktsiy i yeye primineniye k zadacham avtomaticheskogo upravleniya. (Theory of random functions and its application to problems of automatic control), Fizmatgiz, 1960). There are 2 figures and 9 references: 7 Soviet and 2 non-Soviet.

ASSOCIATION: Kafedra rasprostraneniya radiovoln (Radio-Wave Propagation Department)

Card 3/4

Radio-wave absorption measurements ...

once and twice reflected signals, an averaging of $2A_2(t)/A_1(t)$ will be useful. The observation time T varies with the parameters of the inhomogeneities in the layer. Therefore, it should be chosen considering the following demands: 1. T must be as short as possible to avoid distortion of the function R(t) due to averaging. 2. T must be as long as possible to minimize the effect of the random function $f''_o(t)$ on the measurements. In spite of the discrepancy of these demands, a compromise value of T can be found as the function R(t) changes more slowly than f''_o. The demands can be expressed as follows:

1. $1/T \int_{t_o - T/2}^{t_o + T/2} |r(t)|\,dt \ll R(t_o)$

2. $|\alpha z_o \sigma_o| \ll R(t_o)$, where α is the probability factor determining the "confidential" range; σ_o is the standard of the mean value. With numerical estimations these demands can be written as

1) $T^2 \ll 24/B\Omega^2$ (9) and 2) $T^{1/2} \gg (2\tau_{oo})^{1/2} \alpha z_o \sigma_{f''_o}$ (10), where

27786

S/188/61/000/005/002/006
B117/B102

9.9100

AUTHORS: Gusev, V. D., Berezin, Yu. V.

TITLE: Radio-wave absorption measurements in the presence of large inhomogeneities in the ionosphere

PERIODICAL: Moskovskiy Universitet. Vestnik. Seriya III: Fizika, Astronomiya, no. 5, 1961, 39-47

TEXT: The effect of large ionospheric inhomogeneities on the amplitude and phase of reflected radio waves and, thus, on the measured reflection factor R was investigated. A method to reduce this effect was studied. The investigations were based on some experimental data obtained by investigating the F_2 layer. It was shown that the amplitudes of reflected signals may be focused. The focusing effects are to be taken into account to avoid errors in measuring the reflection factor. A study of the behavior of the phase $\varphi(x,y,t)$ of the reflected signal showed that φ and $f_o(u,v,t)$ were random functions. Therefore, statistical analysis and averaging of the measured values of the reflection factor are necessary. When R is determined from results obtained by measuring the amplitudes of

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BEREZIN, Yu.V.

Apparatus for ionospheric research at three frequencies.
Geomag. i aer. 1 no.4:606-611 Jl-Ag '61. (MIRA 14:12)

1. Moskovskiy gosudarstvennyy universitet, fizicheskiy fakul'tet.
(Ionospheric research)

69455

S/139/60/000/01/031/041
E192/E382

The Correlation Methods of Investigating (Ionospheric) Fluctuations in the Presence of a Slowly-changing Component

fluctuations. In the typical case it is found that μ = 60 min . Consequently, the necessary condition is fulfilled since $\tau_{0.5}$ = 3 min and T_A = 12 to 24 hours.
There are 8 figures, 3 tables and 6 references, 5 of which are Soviet and 1 English.

ASSOCIATION: Moskovskiy gosuniversitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: March 17, 1959

Card 7/7

S/139/60/000/01/031/041
E192/E382

The Correlation Methods of Investigating (Ionospheric) Fluctuations in the Presence of a Slowly-changing Component

parameter μ should obey the following expression:

$$\tau_{0.5} \ll \mu \ll T_A$$

From the investigation it is concluded that by employing the method of the "glancing averages" it is possible to eliminate the slow changes when investigating the statistical properties of the fluctuations. The method can be useful in the investigation of the fluctuations of ultrahigh-frequency signals and in the study of the drift of small-scale inhomogeneities. The slow changes can be eliminated provided:

$$\tau_{0.5} \ll \mu \ll T_A$$

where $\tau_{0.5}$ is the correlation radius of the fluctuations and T_A is the average period of the slow

Card6/7

The Correlation Methods of Investigating (Ionospheric) Fluctuations in the Presence of a Slowly-changing Component

The magnitude of the discrepancy between the correlation functions depends on the shape of $\rho_{12}(\tau)$ and on the choice of μ. The relative error in determining $\rho_{12}(\tau)$ from Eq (18) can be represented by Eq (19). Now the significant portions of the correlation function for the ionospheric irregularities can be approximated either by Eq (20) or by Eq (21). The meaning of τ_0 in these equations can be seen from Figure 3. By employing Eq (18) it is possible to investigate the error for the cases represented by Eqs (20) and (21). The relative error for the case represented by Eq (20) is illustrated in Figure 4, while the case of Eq (21) is shown in Figure 5. The shape of the functions ρ_Δ and τ_c for the cases represented by Eqs (20) and (21) are illustrated in Figures 6 and 7. If it is assumed that $\xi(t)$ can be approximated by a portion of a sinusoid, it is found that in order to fulfil the conditions of Eqs (8) and (9), the

S/139/60/000/01/031/041
E192/E382

The Correlation Methods of Investigating (Ionospheric) Fluctuations in the Presence of a Slowly-changing Component

Δ is applied to the function $\Sigma(t)$, such that:

$$\Delta\Sigma(t) = \Delta\Phi(t) + \Delta\varphi(t) .$$

Provided the conditions of Eqs (8) and (9) are fulfilled, $\Delta\Sigma(t)$ can be expressed by Eq (10), which determines the so-called "glancing average" taken over an interval μ. The functions G and F in Eq (10) are the so-called glancing averages for Φ and φ, while $\Delta\Phi$ and $\Delta\varphi$ are the deviations of Φ and φ from the glancing averages. The correlation function for the transformed quantities $\Delta\varphi_i(t)$ is defined by Eq (11). This can be written as Eq (13) provided the notation defined by Eqs (12) is adopted. The expressions entering into Eq (13) are given by the integrals of Eqs (14) - (17). Consequently, Eq (13) can be written as Eq (18). It is seen that by applying the Δ-operation to $\varphi_1(t)$ the correlation given by Eq (18) differs from the function $\rho_{12}(\tau)$.

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The Correlation Methods of Investigating (Ionospheric) Fluctuations in the Presence of a Slowly-changing Component

determined with an error $\delta\rho_T$ (Eq 2a). However, directly it is only possible to determine the correlation function expressed by:

$$\rho_{\xi_1\xi_{2t}}(\tau) = \rho_{\xi_{12}}(\tau) = \frac{(\Phi_1 + \varphi)\,(\Phi_{2t} + \varphi_{2t}) - (\Phi_1 + \varphi_1)\,(\Phi_{2\tau} + \varphi_{2\tau})}{\sqrt{\left[(\Phi_1 + \varphi_1)^2 - (\Phi_1 + \varphi_1)^2\right]\left[(\Phi_{2t} + \varphi_{2t})^2 - (\Phi_{2\tau} + \varphi_{2\tau})^2\right]}} \quad (3)$$

where $\varphi_1(t) = \varphi_1$, $\varphi_2(t + \tau) = \varphi_{2\tau}$ and so on

$(i = 1,\ k = 2)$. By restricting the validity of Eq (2) it can be written as Eq (4), where the symbols are defined on p 180. It is now assumed that a certain operation

Card3/7

4

S/139/60/000/01/031/041
E192/E382

The Correlation Methods of Investigating (Ionospheric) Fluctuations in the Presence of a Slowly-changing Component

$\Sigma(t)$ for a signal reflected from the ionosphere. It is seen that the recording contains slow but large variations which are represented by $\Phi(t)$. Comparatively rapid random changes $\varphi(t)$ having a period of approximately 15-30 min are superimposed on $\Phi(t)$. It is seen that the spread of $\Phi(t)$ is much greater than that of $\varphi(t)$. It is required to determine the function:

$$\rho_{ik}(\tau) = \frac{\overline{\varphi_i(t)\varphi_k(t+\tau)} - \overline{\varphi_i(t)} \cdot \overline{\varphi_k(t+\tau)}}{\sqrt{\overline{\varphi_i^2(t)} - \overline{\varphi_i(t)}^2 \; \overline{\varphi_k^2(t+\tau)} - \overline{\varphi_k(t+\tau)}^2}} \qquad (2)$$

where the horizontal top lines denote statistical averaging for $i, k = 1, 2, 3$. Normally, the averaging can be done over a finite time interval and the function can be

Card2/7

S/139/60/000/01/031/041
E192/E382

9.9100

AUTHORS: Gusev, V.D., Mirkotan, S.F., Kiyanovskiy, M.P. and Berezin, Yu.V.

TITLE: The Correlation Methods of Investigating (Ionospheric) Fluctuations in the Presence of a Slowly-changing Component

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, Nr 1, pp 178 - 190 (USSR)

ABSTRACT: The phase of a signal reflected from the ionosphere can be represented as:

$$\Sigma(t) = \Phi(t) + \varphi(t) \qquad (1)$$

where $\Phi(t)$ is the daily variation of the phase due to the changes of the ionisation in the ionospheric layers during day and night and $\varphi(t)$ is a random stationary function due to the presence of irregularities in the ionosphere and due to its motion. The function $\varphi(t)$ is of direct interest in the investigation of the ionosphere. However, it cannot be measured directly. It is therefore necessary to separate $\varphi(t)$ by some method. An attempt is made to devise such a procedure. Figure 1 shows a typical recording of the phase function

69005

On the "Resolving Power" of Systems for the Measurement of Dimensions of Ionospheric Inhomogeneities

S/055/59/000/04/011/026
B014/B005

with the altitude S_o: $2.8S_o \leq \Delta \leq 46S_o$. In a similar way, the following limits hold for the distance S of two observation points: $2.8S \leq \Delta \leq 23S$. There are 7 figures, 1 table, and 10 references, 7 of which are Soviet.

ASSOCIATION: Kafedra rasprostraneniya radiovoln (Chair of Propagation of Radio Waves)

SUBMITTED: March 18, 1959

Card 2/2

69005

9.9100

S/055/59/000/04/011/026
B014/B005

AUTHORS: Gusev, V.D., Mirkotan, S.F., Berezin, Yu.V., Kiyanovskiy, M.P.

TITLE: On the "Resolving Power" of Systems for the Measurement of Dimensions of Ionospheric Inhomogeneities

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1959, Nr 4, pp 105-115 (USSR)

ABSTRACT: Ionospheric inhomogeneities and motion may be studied by observing the reflection of radio signals by the ionosphere. At a given distribution of the three observation points on the earth's surface, the amounts of inhomogeneities determined by this system show an upper and a lower limit. The present paper deals with the definition of these limits and the estimate of error of the measurement results. The authors describe the apparatus by which the phase shifts of the reflected signal were measured. Figure 1 shows a block diagram of this measuring apparatus. Figure 2 shows the position of the measuring triangle. Details of the measuring method are given. Further, the authors develop formulas for determining the horizontal extension of ionospheric inhomogeneities from the measurement values, and for estimating the error. The investigation shows that the following limits hold for the extension Δ of measurable inhomogeneities at a given right observation triangle

Card 1/2

89772

S/169/61/000/002/026/039
A005/A001

Results of the Investigation of the Parameters of Large-Scale Inhomogeneities of the Ionosphere by the Phase Method

the possibility of the connection and common origin of the processes controlling the formation and motion of all inhomogeneities in the ionosphere. There are 15 references.

E. Kazimirovskiy

Translator's note: This is the full translation of the original Russian abstract.

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89772

S/169/61/000/002/026/039
A005/A001

Results of the Investigation of the Parameters of Large-Scale Inhomogeneities of the Ionosphere by the Phase Method

"broadening", and parameter V_c/V_d allowing the estimation of the part of the chaotic variations. The results are presented of investigations in the period from January 1957 to May 1958. It is shown that inhomogeneities in the horizontal direction are anisotropic; the direction of the larger dimension (the major axis of the characteristical ellipse) approximately coincides with the meridian; the average ratio of the major and minor dimensions (the eccentricity of the ellipse) is about 2; this value and the direction of the major axis are nearly independent of the time during 24 hours; the average value of the major axis is about 500 km by night and about 200 km by day. The values of drift speed of inhomogeneities mostly found are 8 - 10 km/min; the direction of drift is: in the evening and by night northward, by day and in the morning southward. The "broadening" of inhomogeneities proceeds more rapid by day than by night. The speed of chaotic variations V_c exceeds the drift speed on the average by 1.5 times. A comparison is carried out of the results obtained with the values formerly known. It is shown that the characteristics of the large-scale and small-scale inhomogeneities (anisotropy, drift, chaotic variations) agree with each other, which points out

Card 2/3

89772

S/169/61/000/002/026/039
A005/A001

9.9110 (also 1041, 1046)

Translation from: Referativnyy zhurnal, Geofizika, 1961, No. 2, p. 42, # 20295

AUTHORS: Gusev, V. D., Mirkotan, S. F., Drachev, L. A., Berezin, Yu. V., Kiyanovskiy, M. P.

TITLE: Results of the Investigation of the Parameters of Large-Scale Inhomogeneities of the Ionosphere by the Phase Method

PERIODICAL: V sb.: "Dreyfy i neodnorodnosti v ionosfere", No. 1, Moscow, AN SSSR, 1959, pp. 7-21 (English summary)

TEXT: The method of measuring and processing the materials of observations of the large-scale inhomogeneities in the F2-layer of the ionosphere is described in detail. The time variations of the phase of the pulse signal reflected by the F2-layer of the ionosphere were recorded by three spaced stations. The records are being processed by the correlation method with electronic computers. The following inhomogeneity parameters were determined: apparent drift speed V', characteristic speed V'_c, the speed of chaotic variations v_c, the actual drift speed v_d, the parameters of the so-called "characteristical" ellipse, which determine the anisotropy degree of inhomogeneities, their dimensions and time of

Card 1/3

PHASE I BOOK EXPLOITATION SOV/5335

Akademiya nauk SSSR. Mezhduvedomstvennyy komitet po provedeniyu Mezhdunarodnogo geofizicheskogo goda. V razdel programmy MGG: Ionosfera.

Dreyfy i neodnorodnosti v ionosfere (Drifts and Inhomogeneities in the Ionosphere) Moscow, Izd-vo AN SSSR, 1959. 69 p. (Series: Sbornik statey, no. 1) 1,500 copies printed. Added t. p.: Drifts and Irregularities in the Ionosphere.

Resp. Ed.: S. F. Mirkotan; Ed.: A. D. Podol'skiy; Tech. Ed.: V. V. Bruzgul'.

PURPOSE: The publication is intended for geophysicists, meteorologists, and communications specialists.

COVERAGE: This collection of 6 articles presents the results of investigations of drifts and inhomogeneities in the ionosphere, according to observations made at the Ashkhabad, Moscow, Tomsk, and Khar'kov stations during the 1957-1958 period. The fact that these stations are geographically situated at different latitudinal and longitudinal coordinates is of importance for the comparison of observational results presented in individual articles. An English résumé accompanies each article. No personalities are mentioned. References follow the articles.

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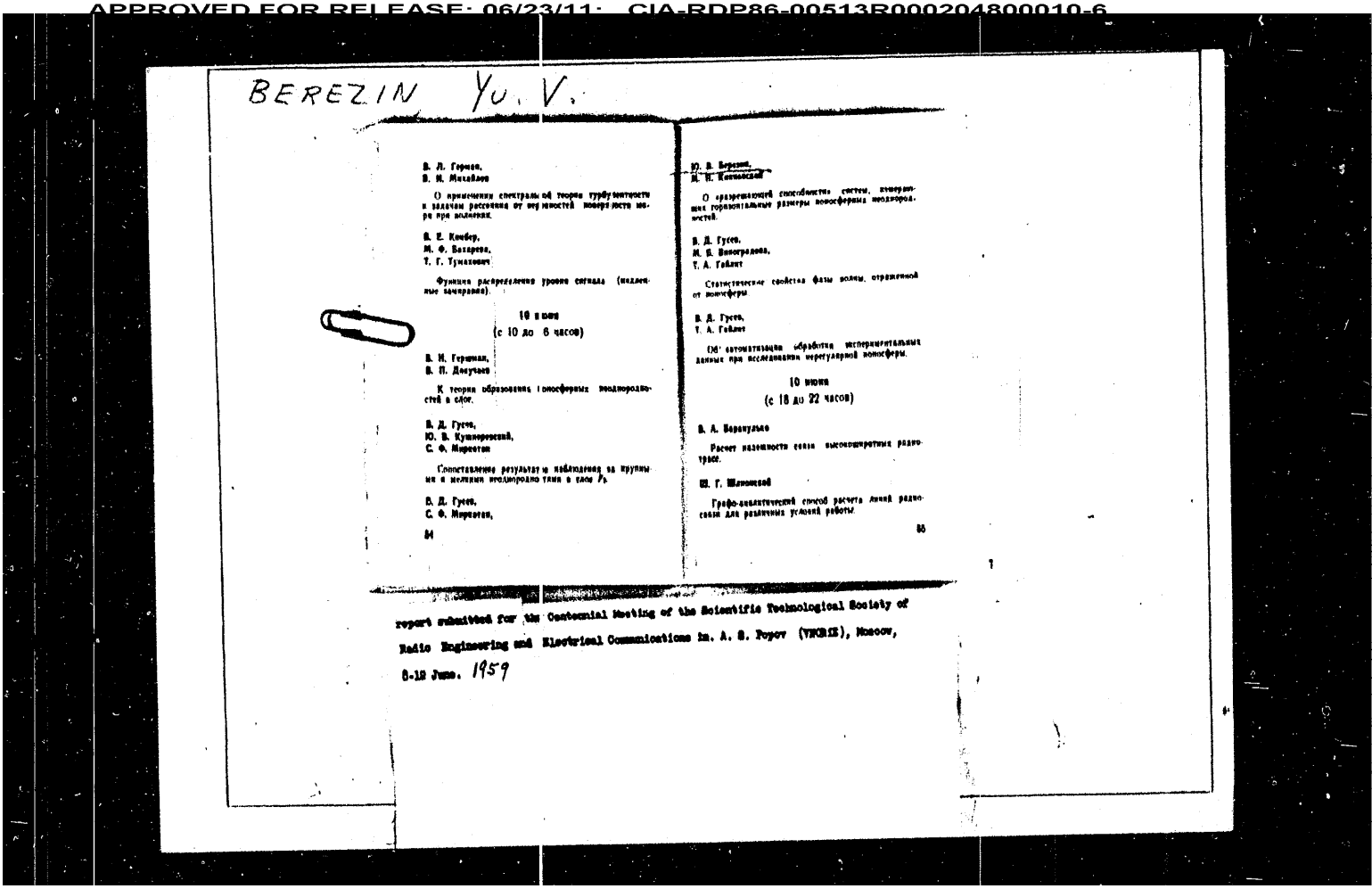

BEREZIN Yu. V.

В. Л. Гершман,
В. И. Михайлов

О применении спектральной теории турбулентности к задачам рассеяния от неоднородностей ионосферы метровых волн.

В. Е. Кондор,
М. Ф. Базарова,
Т. Г. Тумаковец

Функция распределения уровня сигнала (недельные измерения).

10 июня
(с 10 до 6 часов)

В. Н. Гершман,
В. П. Докучаев

К теории образования ионосферных неоднородностей в слое.

В. Д. Гусев,
Ю. В. Кушнеревский,
С. Ф. Мирзоятов

Сопоставление результатов наблюдений за крупными и мелкими неоднородностями в слое F_2.

В. Д. Гусев,
С. Ф. Мирзоятов,

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Ю. В. Березин,
А. Н. Колмовский

О предельной способности систем, измеряющих горизонтальные размеры ионосферных неоднородностей.

В. Д. Гусев,
М. Б. Виноградова,
Т. А. Гайлит

Статистические свойства фазы волны, отраженной от ионосферы.

В. Д. Гусев,
Т. А. Гайлит

Об автоматизации обработки экспериментальных данных при исследовании нерегулярной ионосферы.

10 июня
(с 18 до 22 часов)

В. А. Варакулько

Расчет надежности связи высокоширотных радиотрасс.

Ш. Г. Шапошкой

Графо-аналитический способ расчета линий радиосвязи для различных условий работы.

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Report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORIE), Moscow, 8-12 June. 1959

The Structure and the Motions of Large-Scale Inhomogeneities in the Ionosphere Layer F_2

the presence of inhomogeneities in the ionosphere, the normal to the front of the reflected wave deviates from the vertical direction. For δ and τ_c the average values $\bar{\delta} \sim 0.3$ (day) and $\delta \sim 0.58$ (night) and $\bar{\tau}_c$ were found. There are 1 figure, 1 table, and 6 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: July 18, 1958, by N. N. Bogolyubov, Academician

SUBMITTED: July 17, 1958

The Structure and the Motions of Large-Scale Inhomogeneities in the Ionosphere Layer F_2

its direction which is determined by the angle β; the average shape of the ionosphere inhomogeneities which is determined by the "characteristic ellipse"; the radius of correlation and the spatial dimensions of the inhomogeneities Δ ; the time of spreading τ_c or the parameter of spreading δ of the inhomogeneities. By analysis of the variations of the phase and of the rate of phase variation the direction of the reflected radiowaves could be determined. The correlation functions were calculated by means of an electronic computer of type "Strela". All the above-discussed results concern the layer F_2; they were found from May 1956 to October 1957. The large-scale inhomogeneities have a distinctly anisotropic shape; the dimensions depend on the direction . Numerical values are given for the dimensions of the inhomogeneities. The values of V_d are within the interval 0 - 40 km/min, and most frequently the values 8 - 10 km/min are found. The values of V_d increase only slightly from night to day. Because of

The Structure and the Motions of Large-Scale Inhomogeneities in the Ionosphere Layer F_2

of receiving and transmitting ionosphere stations with phase indicators and photoindicators. The phase variations are recorded on a cinematographic film. The authors used 3 recording apparatus placed in 3 points of the Earth's surface, these points formed a triangle of 30 - 40 km side length. In each of these points the variations of the phase of the reflected signal were recorded. In this way, the authors found a regular smooth curve for $\varphi_p(t)$ on which random-character variations $\varphi(t)$ (which are due to the presence of inhomogeneities and their motions in the ionosphere) are superimposed. The term $\varphi_p(t)$ is due to the variation of the height distribution of the ionization of the ionospheric layers from day to night. A suitable utilization of the results permits a separation of φ_p and φ. (These 2 quantities are not exactly defined in this paper). An analysis of the behavior of $\varphi(t)$ gives data concerning the dimensions, the shape, and the motions of the inhomogeneities. The following parameters were found: The velocity V_d of the horizontal drive in the ionosphere and

SOV/20-123-5-13/50

3(6), 3(7)

AUTHORS: Gusev, V. D., Drachev, L. A., Mirkotan, S. F., Berezin, Yu. V., Kiyanovskiy, M. P., Vinogradova, M. B., Gaylit, T. A.

TITLE: The Structure and the Motions of Large-Scale Inhomogeneities in the Ionosphere Layer F_2 (Struktura i dvizheniya krupnykh neodnorodnostey v ionosfernom sloye F_2)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 817-820 (USSR)

ABSTRACT: The authors invented an integral phase method for the recording of great inhomogeneities and their motions. This method is free from the deficiencies of other methods and consists of the recording of the variations of the phase way of the reflected signal. For small inhomogeneities, these variations are of the order 2π, and for large-scale inhomogeneities - of the order 40 - 200 π. This method has a high precision (which amounts to dozens of meters) and a high resolving power. This permits the use of statistical methods in the investigation of large-scale inhomogeneities. The apparatus for the recording of phase variations consists

Card 1/4

109-10-2/19

Influence of the Large Irregularities of the F_2-layer on its Radio Wave Reflection Coefficient.

SUBMITTED: July 5, 1956.

AVAILABLE: Library of Congress.

Card 4/4

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800010-6

Influence of the Large Irregularities of the F_2-layer on its Radio Wave Reflection Coefficient.

The above theory was checked experimentally by means of an equipment which permitted the simultaneous measurement of the phase and the amplitude of the primary and secondary reflected signals. The amplitudes could be measured with an accuracy of about 10%, so that the reflection coefficient could be determined with an accuracy of 20%. The experimental observations of the two amplitudes and the phase were recorded photographically (see Fig.3). From the analysis of the above, it was found that 89% of the maxima of the amplitudes of the first reflection and 92% of the amplitude maxima of the secondary reflection coincided with the maxima of the phase displacement. The calculated reflection coefficient gives values ranging from 0.25 to 5.4. Where the reflection coefficient was greater than unity, the phase variation was a maximum (85% of the cases). This seems to indicate that such anomalous values of the coefficient are due to large irregularities. There are 5 figures and 5 references, 1 of which is Slavic.

ASSOCIATION: Physics Faculty of the Moscow State University imeni M.V. Lomonosov. (Fizicheskiy Fakul'tet Moskovskogo gosudarstvennogo Universiteta im. M.V. Lomonosova)

Influence of the Large Irregularities of the F_2-layer on its Radio Wave Reflection Coefficient.

the distance between the observation point and the reflection point of the n-th ray at $\Delta r_n = r_n - h$, is expressed by:

$$\frac{\Delta r_n}{a} = \sin\xi + \frac{\chi}{2} \cdot \cos^2\xi \qquad (2)$$

where $\xi = p(x + x_0)$ and $\chi = ap^2h$. On the other hand, the relative change in the amplitude of the reflected wave is expressed by:

$$A_1 = \frac{1}{1 + \chi \sin\xi} \cdot \qquad (4)$$

From Eqs. (2) and (4), it is possible to determine the phase and the amplitude of the field at the observation point. The amplitude of the second reflection is also of some interest, but this can only be determined at the points where the radius of curvature of the reflecting surface is $\rho = \pm \frac{1}{ap^2}$.

Berezin, Yu.V.

AUTHORS: Drachev, L.A., and Berezin, Yu.V. 109-10-2/19

TITLE: Influence of the Large Irregularities of the F_2-layer on its Radio Wave Reflection Coefficient (Vliyaniye bol'shikh neodnorodnostey sloya F_2 na koeffitsiyent otrazheniya radiovoln)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol.II, No.10, pp. 1234 - 1239 + 1 plate (USSR)

ABSTRACT: A strict solution of the problem of the reflection of radio waves from a horizontally non-homogeneous, ionospheric layer is rather complicated, but it is possible to make a quantitative estimate of the amplitude and phase of the reflected wave by means of a comparatively simple theory. For this purpose, it is assumed that the phase of the reflected wave is determined by the length of the ray and the amplitude is given by the curvature of the surface at the point of the reflection. The reflecting surface is in the form of a sinusoidal cylinder, described by Eq.(1) where h is the average height of the reflecting surface, α is the amplitude or the vertical dimension of the irregularity, $p = 2\pi/\Delta$ is the wave number and Δ is the horizontal dimension of the irregularity. Under the above assumptions, it is shown that the change in

Cardl/4

BEREZIN, Yu.L., inzh.; DZYGALO, V.I., inzh.

Automatic measurement of the quantity of solid substance in the pulp. Mekh. i avtom. proizv. 18 no.9:14 S '64.
(MIRA 17:11)

REVAZASHVILI, B.I.; RYNDIN, A.N.; BEREZIN, Yu.L.

Testing a sound-ranging regulator for the automatic control of mill charging at the Tekeli ore dressing plant. TSvet.met. 35 no.12:8-12 D '62. (MIRA 16:2)
(Tekeli--Crushing machinery) (Automatic control)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800010-6

KOROTKEVICH, Aleksandr Timofeyevich; BEREZKIN, Yu.I., red.;
KISLYAKOVA, M.N., tekhn. red.

[In battle and at work always ahead; on the history of the Miasnikov Car Repair Plant] V boiakh i trude - vezde vperedi; k istorii VRZ im. Miasnikova. Minsk, Izd-vo M-va vysshego, srednego spetsial'nogo i professional'nogo obrazovaniia BSSR, 1962. 41 p. (MIRA 16:6)
(Minsk--Railroads--Cars)

ACC NR: AP6037086

Particular attention is paid to the case when the solution consists of an individual peak (soliton) and a "tail" representing a limited wave packet of small amplitudes. Conditions under which non-soliton solutions are obtained, and under which the initial perturbation breaks up into a smaller or a larger number of solitons are determined. Certain qualitative peculiarities of the "pure-soliton" solutions are explained. Orig. art. has: 4 figures and 41 formulas.

SUB CODE: 20/ SUBM DATE: 11Jun66/ ORIG REF: 005/ OTH REF: 007

Card 2/2

ACC NR: AP6037086 SOURCE CODE: UR/0056/66/051/005/1557/1568

AUTHOR: Berezin, Yu. A.; Karpman, V. I.

ORG: Novosibirsk State University (Novosibirskiy gosudarstvennyy universitet)

TITLE: Nonlinear evolution of disturbances in plasmas and other dispersive media

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 5, 1966, 1557-1568

TOPIC TAGS: plasma instability, plasma wave propagation, plasma magnetic field, nonlinear plasma, asymptotic solution

ABSTRACT: This is a continuation of earlier work (ZhETF v. 46, 1880, 1964), in which a formula of the type first given by D. J. Korteweg and G. de Vries (Phil. Mag. v. 39, 442, 1895) was derived for the case of waves propagating in a plasma at an angle to the magnetic field. In the present paper the authors clarify some characteristic features of different types of the solutions obtained when such an equation is used to describe the evolution of nonlinear disturbances in a plasma or in other dispersive media. The condition for the decay of the disturbances into various types of solutions are obtained. A similarity principle is formulated for the Korteweg-de Vries equation and the physical meaning of self-similar solutions of this equation is explained. Some general asymptotic relations are obtained for nonstationary solutions.

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ACC NR: AP7000636

of the results of this study to laboratory plasmas that are not collision-dominated. Discussion of the dissipation on the wave structure shows the importance of collective effects which must be assumed to explain experimental results. Orig. art. has: 8 figures, 8 formulas.

SUB CODE: 20/ SUBM DATE: 19Apr66/ ORIG REF: 004/ OTH REF: 002

Card 2/2

ACC NR: AP7000636 SOURCE CODE: UR/0414/66/000/003/0003/0011

AUTHOR: Berezin, Yu. A. (Novosibirsk); Kurtmullayev, R. Kh. (Novosibirsk)

ORG: none

TITLE: Cylindrical waves in a diluted plasma in presence of strong collisionless dissipation

SOURCE: Fizika goreniya i vzryva, no. 3, 1966, 3-11

TOPIC TAGS: plasma magnetic field, plasma shock wave, rarefied plasma

ABSTRACT: A study of collisionless shocks propagating in laboratory plasmas is reported. A cylindrical symmetric two-fluid system subjected to externally applied magnetic fields varying sinusoidally is considered theoretically. The numerical solutions obtained for the magnetic field distribution in the plasma at various times show that this model is sufficient to account for the experimentally observed field structure if an arbitrary constant dissipation is assumed. This work allows one to establish regions in which the wave is formed, becomes quasistationary and changes over to a flow with rapidly increasing field near the plasma axis. It is also shown that the magnetic piston behind the wave front determines the behavior of the wave, influencing strongly the ratio of the magnetic field at a particular phase to that of the plasma density. A table of plasma parameters sufficiently varying is provided, allowing the application-

UDC: 532.593+533.9.07

Card 1/2

L 40901-66

ACC NR: AP6020549

phenomenon of the so-called "reversal" of strong shock waves can lead to an effective dissipation of energy and heating of plasma. The indicated phenomena are also of value for understanding processes occurring in the interplanetary medium, for example the interaction of the solar wind with the geomagnetic field. Unfortunately, the structure of a shock wave and its width has still not been investigated in space experiments, but apparently this will be done in the near future owing to the increasing volume of work being performed on satellites and rockets. Orig. art. has: 14 figures and 11 formulas.

SUB CODE: 20/ SUBM DATE: 16Dec65/ ORIG REF: 021/ OTH REF: 017

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800010-6

L 40901-66 EWP(m)/EWT(l) IJP(c) AT/WW

ACC NR: AP6020549 SOURCE CODE: UR/0414/66/000/001/0003/0028

AUTHOR: Berezin, Yu. A. (Novosibirsk); Kurtmullayev, R. Kh. (Novosibirsk); Nesterikhin, Yu. Ye. (Novosibirsk)

65
B

ORG: none

TITLE: Collisionless shock waves in a rarefied plasma

SOURCE: Fizika goreniya i vzryva, no. 1, 1966, 3-28

TOPIC TAGS: plasma shock wave, shock wave front, shock wave analysis, rarefied plasma, shock wave structure

ABSTRACT: The author discusses the theory of the structure of shock waves, dispersion effects, shock waves with an oscillatory structure, collisionless dissipation, shock waves with an aperiodic profile, conditions for exciting waves, devices used to excite strong shock waves, the basic method of plasma diagnosis, dynamics of cylindrical waves, and the structure of a shock wave and physical phenomena at the front. The problem of shock waves includes a wide scope of physical phenomena such as dispersion of plasma oscillations, microscopic instabilities, collisionless damping, and others. The interest shown in collisionless shock waves is to a considerable extent due to the fact that instabilities developing at the wave front and the

Card 1/2 UDC: 532.593+533.9.07

L 26762-66

ACC NR: AP6013915

If friction between the plasma components is introduced into the original calculations, the result is a shock wave having an oscillator structure with a steep front. A profile is given for such a wave (see figure 3).

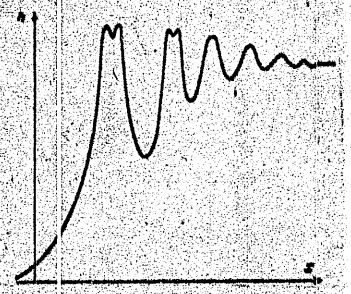


Fig. 3.

Orig. art. has: 4 figures, 1 formulas.

SUB CODE: 20/ SUBM DATE: 29Oct65/ ORIG REF: 003/ OTH REF: 001

Card 3/3

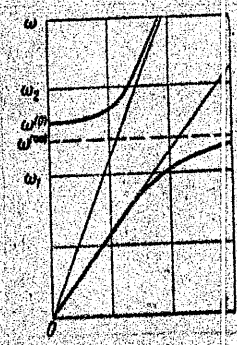


Fig. 1.

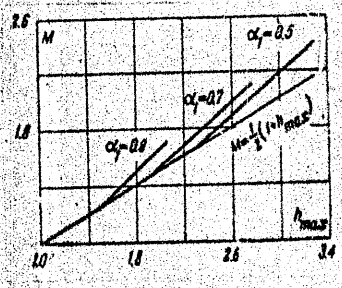


Fig. 2.

to the phase velocity of low oscillation at high frequencies. As the wave approaches the upper limit the light component drops out. Dispersion effects which compensate nonlinear spiraling appear at higher frequencies due to electron inertia. The critical velocity of the wave and the maximum magnetic field in the wave decrease with the reduction in concentration of the light component. The ion energy in the wave is estimated. It is shown that light ions are accelerated in a direction perpendicular to the wave motion when an isolated wave passes through a three-component plasma.

L 26762-66 EWT(1)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) AT

ACC NR: AP6013915 SOURCE CODE: UR/0207/66/000/002/0003/0006

AUTHOR: Berezin, Yu. A. (Novosibirsk); Sagdeyev, R. Z. (Novosibirsk)

93
B

ORG: none

TITLE: Theory of nonlinear waves in a plasma

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1966, 3-6

TOPIC TAGS: plasma physics, plasma magnetic fluid, ion, shock wave, electron, plasma wave

ABSTRACT: The authors study nonlinear waves propagating across a magnetic field in a cold rarefield quasineutral plasma consisting of electrons and two types of ions. Dispersion curves are given for low amplitude waves in a three-component plasma (see figure 1). The lower branch of the dispersion curve describes nonlinear waves at relatively low velocities. As velocity increases, the upper branch of the curve describes nonlinear wave profiles. Electron velocity is determined by drift approximation. An expression is given for the velocity of an isolated wave in terms of the maximum magnetic field in the wave. A figure is given showing this relationship for various relative ion concentrations (see figure 2). The lower the concentration of light component in the plasma the greater is the deviation from linearity. The lower velocity limit of the wave is equal to the speed of sound and the upper limit is equal

Card 1/3

L 31545-66

ACC NR: AP6009056

4

Iskol'dskiy, R. Kh. Kurtmullayev, Yu. Ye. Nesterikhin, and A. G. Ponomarenko (Eksperimenty po besstolknovitel'noy udarnoy volne v plasme. Zh. ekperim. i teor. fiz., 1964, vol. 46, No. 8). The author thanks R. Z. Sagdeyev and N. N. Yanenko for valuable consultations and discussions, as well as G. A. Maksimov and Ye. A. Tsvetov for assistance in the work. Orig. art. has: 2 figures and 9 formulas.

SUB CODE: 20 / SUBM DATE: 22Mar65 / ORIG REF: 004 / OTH REF: 003

Card 2/2 LC

L 31545-66 EWT(l)/ETC(f) IJP(c) AT

ACC NR: AP6009056 SOURCE CODE: UR/0207/66/000/001/0107/0110

53
49
8

AUTHOR: Berezin, Yu. A. (Novosibirsk)

ORG: none

TITLE: Cylindrical waves propagating across a magnetic field in a rarefied plasma

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 1, 1966, 107-110

TOPIC TAGS: cylindric wave, plasma wave propagation, plasma wave, rarefied plasma

ABSTRACT: The profile of waves of finite amplitude in a rarefied plasma is determinable by two conflicting processes: nonlinear twisting and "smearing" due to dispersion effects. For waves propagating across a magnetic field in a cold rarefied plasma the dispersion law is such that the phase velocity of small oscillations decreases with decreasing length of the wave. Such a dispersion law leads to the possibility of the existence of stationary "compression" waves of finite amplitude (isolated and periodic). Some authors have investigated nonstationary plane waves moving across a magnetic field induced by increasing magnetic pressure on the plasma-vacuum boundary. The present author applies numerical integration of the corresponding equation system to the investigation of cylindrical waves propagating in a cold rarefied plasma across a high-intensity magnetic field. The results are important for experiments on rapid compression of plasma columns by a magnetic field under conditions when the plasma may be considered sufficiently rarefied as described by A. M.

Card 1/2

L 5387-66
ACC NR: AP5027279

$$u(0,\tau) = v(0,\tau) = 0,\ h_2(0,\tau) = 0,\ \frac{\partial h_1}{\partial \xi}(0,\tau) = 0,\ h_2(1,\tau) = 0,\ h_1(1,\tau) = 1 + A f(\tau)$$

$$h_1(1,\tau) = 1 + A f(\tau) \quad (A = \text{const})$$

and the initial conditions by

$$v(\xi, 0) = \xi, \quad u(\xi, 0) = v(\xi, 0) = w(\xi, 0) = h_2(\xi, 0) = 0, \quad h_1(\xi, 0) = 1 \ (\xi, 0) = 1$$

where f(T) is a given function of time. The solution is obtained numerically and the results shown graphically. The first of these depicts the propagation of magnetic disturbances along the plasma axis for small times. These exhibit an oscillatory character. The second shows the wave profiles at intermediate times. The longer the dispersion length, the larger is the oscillation. The fundamental wave front moves at the Alfven speed. In conclusion, the author thanks R.Z. Sagdeyev, V.I. Karpman, N.N. Yanenko, and Yu.Ye. Nesterikhin for consultation and discussions and O.A. Gradov for helping in the numerical computations. Orig. art. has: 4 figures and 3 equations.

SUB CODE: ME, EM SUBM DATE: 01Feb65/ ORIG REF: 006/ OTH REF: 005

Card 2/2

L 5387-66 EWT(1)/ETC/EPF(n)-2/EWG(m)/EPA(w)-2 IJP(c) AT
ACC NR: AP5027279 SOURCE CODE: UR/0207/65/000/005/0116/0118

AUTHOR: Berezin, Yu. A. (Novosibirsk) 61

ORG: none

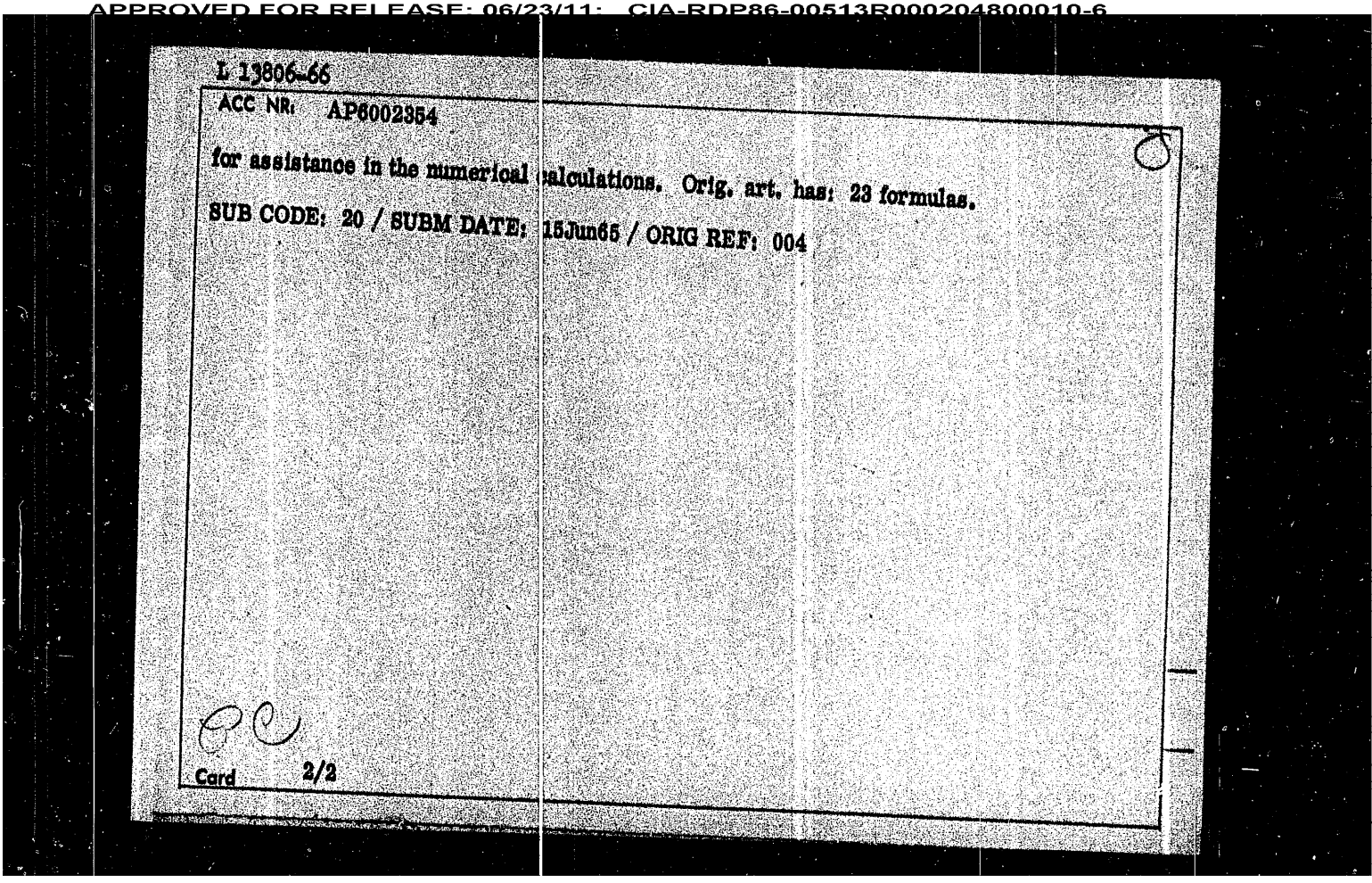
TITLE: Finite amplitude cylindrical waves in rarefied plasma

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1965, 116-118

TOPIC TAGS: rarefied plasma, cylindric wave, magnetic field, magnetic pressure

ABSTRACT: The propagation of unsteady cylindric waves in rarefied cold plasma under a strong magnetic field is investigated. The plasma is assumed to be quasi-neutral, the gas dynamic pressure is neglected in comparison to the magnetic pressure, and no collisions exist between particles. At time $t = 0$, the uniform cylindrical plasma of radius "a" and density N is subjected to strong magnetic field H_0 directed along its axis. The resulting displacement is described by a set of five equations, three describing the plasma motion along three axes and two describing the magnetic induction. The boundary conditions are given by

Card 1/2



L 13806-66
ACC NR: AP6002354

for assistance in the numerical calculations. Orig. art. has: 23 formulas.

SUB CODE: 20 / SUBM DATE: 15Jun65 / ORIG REF: 004

Card 2/2

L 13806-66 EWT(1)/ETC(R)/EPF(n)-2/EWG(m) LIP(c) AT

ACC NR: AP6002354 SOURCE CODE: UR/0207/65/000/006/0026/0032

AUTHOR: Berezin, Yu. A. (Novosibirsk)

ORG: none

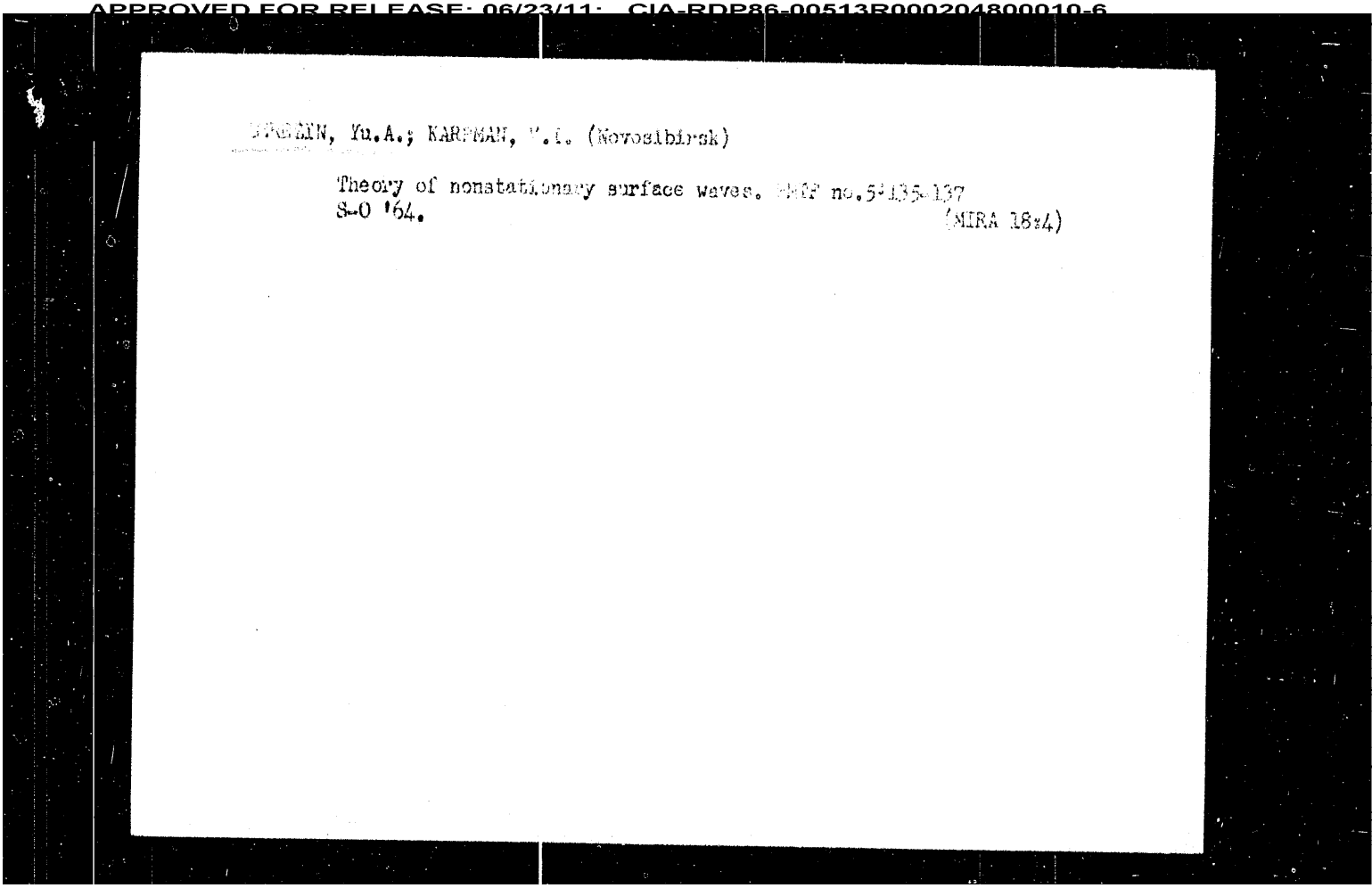
TITLE: Waves of finite amplitude in a hot plasma

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 6, 1965, 26-32

TOPIC TAGS: shock wave propagation, high temperature plasma, low temperature plasma, rarefied plasma, magnetic field, motion equation

ABSTRACT: The author studies the structure of a plane shock wave of arbitrary force propagating in a hot rarefied plasma across a magnetic field. The problem of the propagation of unsteady waves of finite, but small amplitude is examined under the same conditions. The author also considers waves of finite amplitude in a cold rarefied plasma. The profile of such waves is formed under the effect of nonlinear and dispersion effects, the latter being caused by the inertia of the electrons and anisotropy of the plasma. A system of equations is used consisting of the equation of motion of the electron and ion components of plasma, the discontinuity equation, and Maxwell equations. The plasma is assumed to be quasineutral. The author introduces into the equation of motion the gas-kinetic pressure which is of a tensor nature since the distribution of ions does not have spherical symmetry. In conclusion, author thanks R. Z. Sagdeyev and N. N. Yanenko for a discussion of the work, and R. N. Makarov

Card 1/2



KARPMAN, Yu.A.; KARPMAN, V.I. (Novosibirsk)

Theory of nonstationary surface waves. PMTF no.5:135-137 S-O '64. (MIRA 18:4)

DUBOVOY, L.V.; BEREZIN, Yu.A.

Choice of optimum parameters for a relativistic plasma accelerator.
Zhur. tekh. fiz. 34 no.10:1867-1870 O '64.

(MIRA 17:12)